CNA1014H (ON1387)

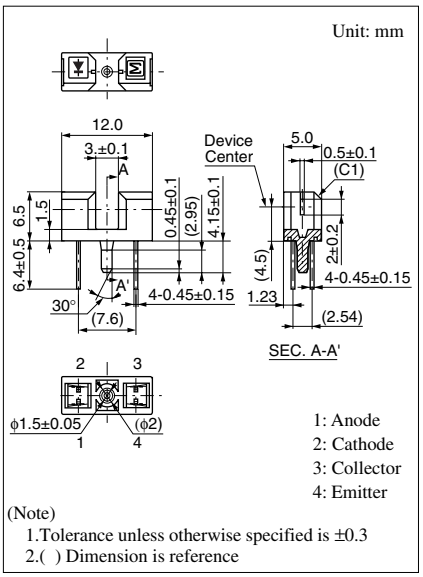
Photo Interrupters

■ Outline

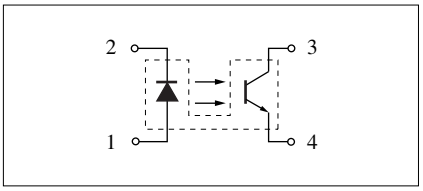
CNA1014H is a transmittive photosensor series in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

■ Features

- Position detection accuracy: 0.3 mm
- With attachment positioning boss
- Fast response: t_r , t_f = 5 µs (typ.)



Internal connection



■ Adsolute Maximum Ratings T_a = 25°C

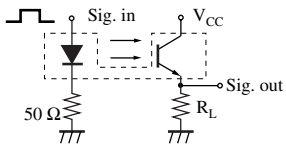
Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	V
	Forward current (DC)	I_F	50	mA
	Power dissipation *1	P_D	75	mW
Output (Photo transistor)	Collector current	I_C	20	mA
	Collector to emitter voltage	V_{CEO}	30	V
	Emitter to collector voltage	V_{ECO}	5	V
	Collector power dissipation *2	P_C	100	mW
Temperature	Operating ambient temperature	T_{opr}	−25 to +85	°C
	Storage temperature	T_{stg}	−40 to +100	°C

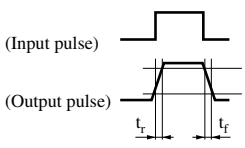
Note) ∗1: Input power derating ratio is 1.0 mW/°C at T_a = 25°C.
∗2: Output power derating ratio is 1.33 mW/°C at T_a = 25°C.

■ Electrical Characteristics T_a = 25°C ± 3°C

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage (DC)	V_F	I_F = 20mA		1.25	1.4	V
	Reverse current (DC)	I_R	V_R = 3 V			10	µA
Output characteristics	Collector cutoff current	I_{CEO}	V_{CE} = 10 V		10	200	nA
Transfer characteristics	Collector current	I_C	V_{CE} = 5 V, I_F = 20 mA, R_L = 100 Ω	1.5		15	mA
	Collector to emitter saturation voltage	$V_{CE(sat)}$	I_F = 40 mA, I_C = 1 mA			0.4	V
	Response time *	t_r , t_f	V_{CC} = 5V, I_C = 1 mA, R_L = 100 Ω		5		µs

Note) ∗: Switching time measurement circuit

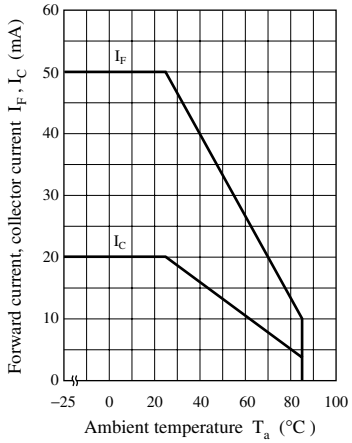




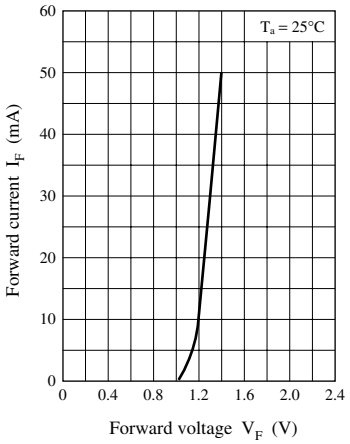
t_r : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)
t_f : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)

Note) The part number in the parenthesis shows conventional part number.

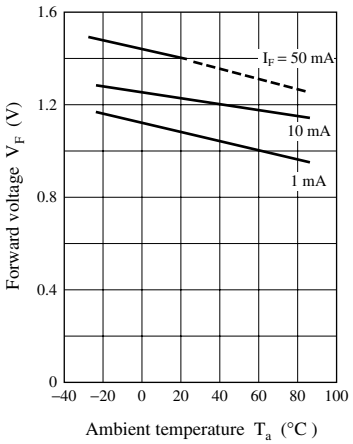
I_F , I_C — T_a



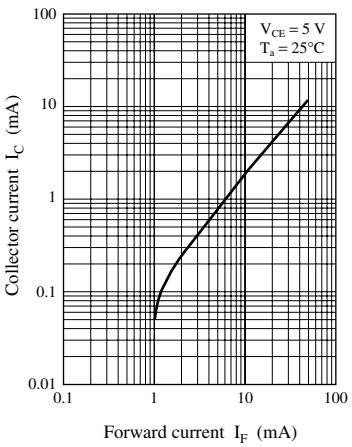
I_F — V_F



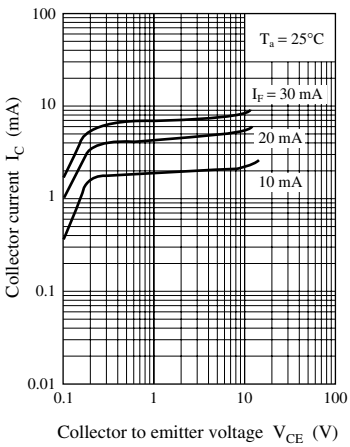
V_F — T_a



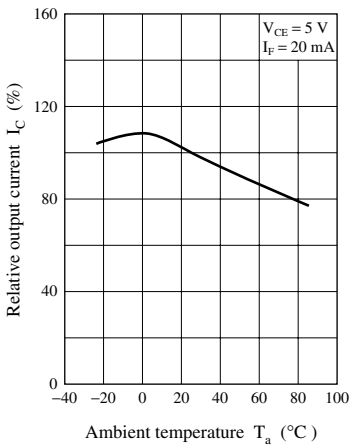
I_C — I_F



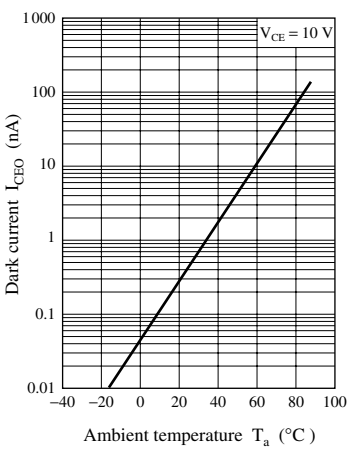
I_C — V_{CE}



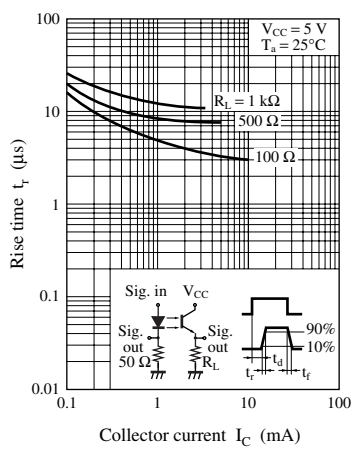
I_C — T_a



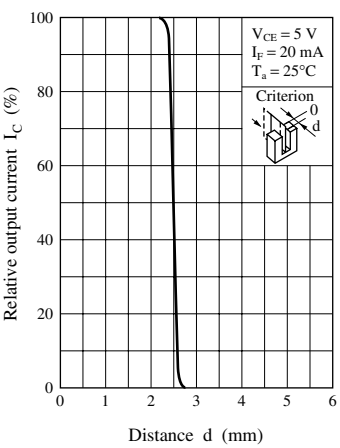
I_{CEO} — T_a



t_r — I_C



I_C — d



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⚠ DANGER

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